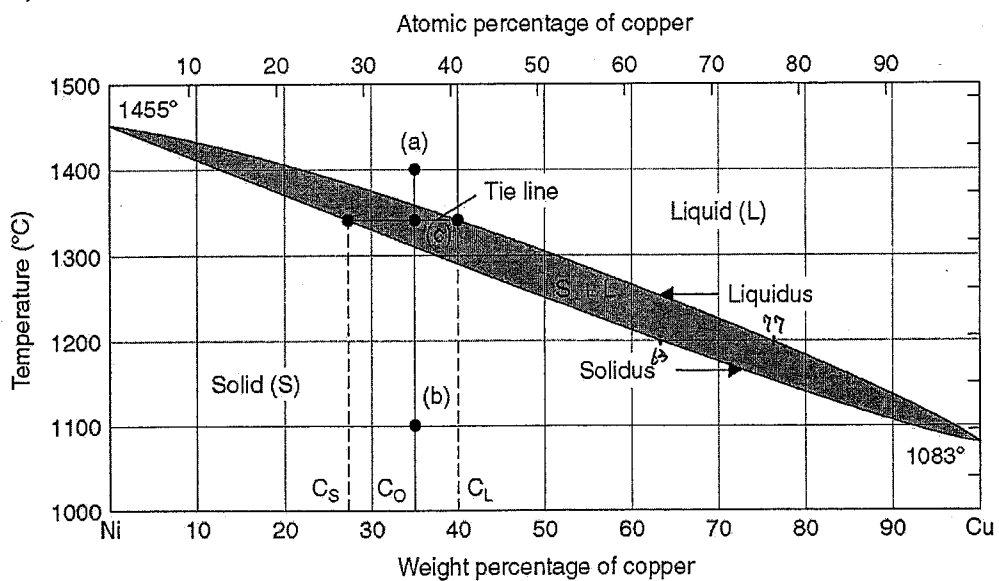


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|-------|--------------|------|-----|
| 招生學年度 | 106          | 招生類別 | 碩士班 |
| 系所班別  | 材料科學與工程學系碩士班 |      |     |
| 科目名稱  | 材料科學導論       |      |     |
| 注意事項  | 本考科可使用掌上型計算機 |      |     |

1. A glass bottle, a soda can and a plastic soda bottle are made of different materials. (a) Please compare the weights and the amount of material used. (b) Describe why so much or so little material was necessary. (c) Briefly describe how they were manufactured? (15%)
2. Describe briefly three primary interatomic bonds and give one example for each? (15%)
3. Cesium metal has a Body-Centered Cubic (BCC) structure with a lattice parameter of 0.608 nm. What is its atomic radius? (10%)
4. Describe the effect of annealing on the microstructure of a metal? (10%)
5. Describe the mechanism of plastic deformation in metals and how to increase their strength (please list three mechanisms)? (20%)
6. Please do a complete phase analysis (phase present, their amounts and their compositions) for Cu-Ni alloys with 70% copper at 1300, 1200, 1100 and 27°C. (20%)



7. How does one make an n-type semiconductor (For example silicon)? Please list 3 electronic or optoelectronic devices made of semiconductor materials. (10%)